

**CITY OF WOBURN
CONTRIBUTORY RETIREMENT SYSTEM**

Actuarial Valuation Report

January 1, 2000

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Report Summary:

Highlights

January 1, 1999

January 1, 2000

Contributions

Funding Schedule FY 2001	\$3,195,000	\$3,195,711
Funding Schedule FY 2002	3,307,000	3,238,347

Funded Ratios

GAS No. 25	78.2%	85.6%
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Participants

Actives	492	490
Inactives	29	50
Retirees and Beneficiaries	328	337
Disabilities	<u>41</u>	<u>40</u>
Total	890	917

Payroll

Payroll of Active Members	\$16,269,482	\$17,183,350
Average Payroll	33,068	35,068

Normal Cost

Employer	1,254,113	1,110,141
Employee	1,217,677	1,305,112
Administrative Expenses	<u>200,000</u>	<u>200,000</u>
Total	2,671,790	2,615,253

Actuarial Accrued Liabilities

Actives	45,620,181	48,197,769
Retirees, Beneficiaries, Disabilities and Inactives	<u>39,852,165</u>	<u>40,564,993</u>
Total	85,472,346	88,762,762

Actuarial Value of Assets

66,860,613 75,960,104

Unfunded Actuarial Accrued Liabilities

\$18,611,733 \$12,802,658

Introduction

This report presents the City of Woburn actuarial valuation findings as of January 1, 2000, under the Commonwealth of Massachusetts Retirement System.

The actuarial valuation is based on:

- Provisions of the General Laws of the Commonwealth of Massachusetts (principally Chapter 32) as of January 1, 2000, and Chapter 399 of the 1992 General Laws
- Employee data provided by the Retirement Board
- Asset information reported to the Public Employees' Retirement Administration Commission by the City of Woburn Contributory Retirement System
- Actuarial assumptions approved by the Retirement Board

The valuation also includes the contributions required under the provisions of Chapter 697 as interpreted by the Public Employees' Retirement Administration Commission (PERAC).

The valuation and appropriation forecast are prepared in accordance with Chapter 32 as of January 1, 2000. They account for:

- The passage of Chapter 306 regarding handling of administrative expenses
- The increased employee contribution rate of 9.0% of earnings effective for all future employees hired after July 1, 1996
- Annual cost-of-living adjustments (COLA) of 3.00%.

The valuation and forecast do not account for:

- Any other subsequent changes in the law
- Section 3(8)(c) transfers between systems
- State-mandated benefits
- Cost-of-living increases granted to retired members between 1982 and 1997. The cost of these benefits has been assumed by the State under Proposition Two and One-Half.

Actuarial Experience

In performing the actuarial valuation, various assumptions are made regarding such factors as mortality, retirement, disability, and withdrawal rates as well as both payroll, salary increases, and investment returns. A comparison of the current valuation and the prior valuation is made to determine how closely actual experience corresponded to anticipated occurrences. This analysis of the system provides insight into the overall quality of the actuarial assumptions and helps explain any change in the annual appropriation.

During the last year since the last actuarial valuation, the total unfunded actuarial accrued liability decreased by 31.2% to \$12,802,658. The decrease is the result of net favorable actuarial experience during the preceding year. The primary component of favorable experience included annual investment return higher than 7.75% assumption.

A \$200,000 load has been added directly to employer normal cost to account for administrative expenses.

Actuarial Costs and Liabilities:

Normal Costs

The normal cost is the sum of the individual normal costs determined for each member as if the assumptions underlying the cost determinations had been exactly realized. An individual normal cost represents that part of the cost of a member's future benefits which are assigned to the current year as if the costs are to remain level as a percentage of the member's pay. Benefits payable under all circumstances (i.e., retirement, death, disability, and terminations) are included in this calculation. Anticipated employee contributions to be made during the year are subtracted from the total normal cost to determine employer normal cost. The total normal cost is divided by total payroll to determine the normal cost as a percent of pay. The normal cost is shown in Table I.

Table I

	<u>January 1, 1999</u>	<u>January 1, 2000</u>
Superannuation	\$1,874,543	\$1,877,420
Death	244,397	179,375
Disability	275,284	278,338
Terminations	77,566	80,120
Administrative Expenses	<u>200,000</u>	<u>200,000</u>
Total Normal Cost	2,671,790	2,615,253
% of Pay	16.4%	15.2%
Employee Contributions	1,217,677	1,305,112
% of Pay	7.5%	7.6%
Employer Normal Cost	\$1,454,113	\$1,310,141
% of Pay	8.9%	7.6%

Present Value of Actuarial Accrued Liabilities

The present value of actuarial accrued liabilities (AAL) represents today's value of all benefits earned by the actives and inactive. The AAL can be compared to the assets to determine the funded status of the Plan. The value of these earned benefits is shown in Table II below.

Table II

	<u>January 1, 1999</u>	<u>January 1, 2000</u>
Actives		
Superannuations	\$40,488,002	\$43,165,002
Death	2,863,739	2,571,432
Disability	2,511,986	2,698,556
Terminations	(243,546)	(237,221)
Inactives		
Retirees	33,905,670	34,494,928
Disabled Retirees	5,794,536	5,811,870
Inactives	<u>151,959</u>	<u>258,195</u>
Total	\$85,472,346	\$88,762,762

Present Value of Future Benefits

The present value of future benefits represents today's value of all benefits earned by the inactivees as well as all benefits earned and expected to be earned in the coming years by the actives. The difference between the present value of future benefits and the present value of actuarial accrued liabilities is the value of benefits to be earned in the coming years. The value of the total expected benefits is shown in Table III.

Table III

	<u>January 1, 1999</u>	<u>January 1, 2000</u>
Actives		
Superannuation	\$60,234,281	\$63,285,066
Death	5,415,711	4,501,956
Disability	5,617,855	5,794,247
Terminations	678,386	724,348
Inactives		
Retirees	33,905,670	34,494,928
Disabled Retirees	5,794,536	5,811,870
Inactives	<u>151,959</u>	<u>258,195</u>
Total	\$111,798,398	\$114,870,610

Funded Status and Appropriations:

Market Value of Plan Assets

The trust fund composition on a market value basis is shown in Table IV.

Table IV

	<u>January 1, 1999</u>	<u>January 1, 2000</u>
Cash equivalents	\$644,788	\$2,364,051
Short term investments	200,000	200,000
Fixed income securities	25,062,214	22,019,262
Equities	31,126,216	35,048,287
Other	7,315,522	4,923,393
International	0	9,206,415
Accounts receivable	2,112,392	1,863,028
Accounts payable	0	0
Accrued income	<u>399,481</u>	<u>335,667</u>
Total Market Value	\$66,860,613	\$75,960,104
Total Actuarial Value	\$66,860,613	\$75,960,104

Unfunded Actuarial Accrued Liabilities

Under the Entry Age Normal Actuarial Cost Method, the Actuarial Accrued Liability represents what the accumulated assets would have been as of the valuation date if:

- current plan provisions and assumptions had always been in effect,
- experience conformed exactly to assumptions, and
- the normal cost had been contributed each year since inception.

The actuarial value of the Fund's assets as of the end of the prior year are subtracted from the Actuarial Accrued Liability (AAL) to determine the Unfunded Actuarial Accrued Liability (UAAL) as of the valuation date. Over time, annual pension contributions will accumulate Plan assets equal to the AAL and the UAAL will be eliminated. Thereafter annual contributions equal to the normal cost will keep the Plan's assets and liabilities in balance. The UAAL is developed in Table V.

Table V

	<u>January 1, 1999</u>	<u>January 1, 2000</u>
Actuarial Accrued Liability	\$85,472,346	\$88,762,762
Actuarial Assets	<u>66,860,613</u>	<u>75,960,104</u>
Unfunded Actuarial Accrued Liability	\$18,611,733	\$12,802,658
Funded Status	78.2%	85.6%

Appropriations

The pension appropriation for the upcoming fiscal years have been calculated in accordance with the requirements set forth in Section 22D of Chapter 32 of the Massachusetts General Laws. These amounts were calculated to comply with the June 30, 2028, full funding mandate for all accrued liabilities. The pension appropriation is the sum of the:

- Employer normal cost,
- Level amortization of the prior unfunded actuarial accrued liability by
June 30, 2011
\$ 12,276,596 over 11 years
- Level amortization of the Early Retirement Incentive unfunded liability by June 30, 2008
\$ 526,062 over 8 years
- Interest adjustment for payments contributed monthly over fiscal year.

The pension appropriation is shown in Table VI.

Table VI

	<u>January 1, 1999</u>	<u>January 1, 2000</u>
Normal cost	\$1,454,113	\$1,310,141
Amortization payment of the prior accrued liability	1,658,569	1,576,670
Amortization payment of ERI	84,154	84,154
Amortization payment of current (gains)/losses	<u>(326,880)</u>	<u>0</u>
Total cost	\$2,869,956	\$2,970,965
% of Pay	17.6%	17.3%
Fiscal 2001 cost	\$3,195,000	\$3,195,711
Fiscal 2002 cost	\$3,307,000	\$3,238,347

Appropriation Forecast

The following exhibit forecasts employer and employee contributions over the next 32 years under the adopted funding schedule.

Note that the forecast is based upon an "open group" method. This method assumes that sufficient employees will be hired each year to keep the number constant. The total payroll of the system is expected to increase 4.5% per year. The employee contribution rate is expected to increase to 10.5% by 2028 with replacement of members contributing 5%, 7%, and 8% with those contributing 9%. Payments are assumed to be spread over the fiscal year.

The employer total cost is expected to slightly decrease during the next 11 years until the unfunded liabilities are completely paid off, at which time only the normal cost will remain. The total cost decrease represents on average about 18.6% of payroll and will decrease to 13.4% by the time the unfunded liabilities are fully paid off, leaving only a normal cost of 6.9% thereafter. The decrease in the cost as a percentage of payroll is a result of the increase in member deductions.

Appropriation Forecast
(amounts in thousands)

Fiscal Year Ending	Employee Payroll*	Employee Contribution	Employer Normal Cost with Interest	Amortization Payments with Interest	Employer Total Cost with Interest	Employer Total Cost % of Payroll	Funded Ratio % **
2001	\$17,183	\$1,305	\$1,409	\$1,786	\$3,196	18.6	85.6
2002	17,957	1,383	1,452	1,786	3,238	18.0	87.2
2003	18,765	1,466	1,496	1,786	3,282	17.5	88.7
2004	19,609	1,553	1,540	1,786	3,327	17.0	90.1
2005	20,491	1,645	1,586	1,786	3,372	16.5	91.5
2006	21,414	1,742	1,632	1,786	3,419	16.0	92.9
2007	22,377	1,844	1,680	1,786	3,466	15.5	94.2
2008	23,384	1,952	1,728	1,786	3,515	15.0	95.4
2009	24,436	2,066	1,778	1,696	3,474	14.2	96.7
2010	25,536	2,187	1,828	1,696	3,524	13.8	97.8
2011	26,685	2,314	1,880	1,696	3,576	13.4	98.9
2012	27,886	2,448	1,932	0	1,932	6.9	100.0
2013	29,141	2,590	1,985	0	1,985	6.8	100.0
2014	30,452	2,739	2,039	0	2,039	6.7	100.0
2015	31,823	2,896	2,094	0	2,094	6.6	100.0
2016	33,255	3,062	2,150	0	2,150	6.5	100.0
2017	34,751	3,238	2,207	0	2,207	6.4	100.0
2018	36,315	3,422	2,264	0	2,264	6.2	100.0
2019	37,949	3,617	2,322	0	2,322	6.1	100.0
2020	39,657	3,823	2,380	0	2,380	6.0	100.0
2021	41,441	4,039	2,440	0	2,440	5.9	100.0
2022	43,306	4,268	2,499	0	2,499	5.8	100.0
2023	45,255	4,508	2,559	0	2,559	5.7	100.0
2024	47,291	4,762	2,620	0	2,620	5.5	100.0
2025	49,420	5,030	2,680	0	2,680	5.4	100.0
2026	51,643	5,311	2,741	0	2,741	5.3	100.0
2027	53,967	5,609	2,802	0	2,802	5.2	100.0
2028	56,396	5,922	2,863	0	2,863	5.1	100.0
2029	58,934	6,188	2,992	0	2,992	5.1	100.0
2030	61,586	6,467	3,127	0	3,127	5.1	100.0
2031	64,357	6,757	3,267	0	3,267	5.1	100.0
2032	67,253	7,062	3,414	0	3,414	5.1	100.0

* Calendar basis

** As of beginning of the Fiscal Year

GAS No. 25 and GAS No. 27

Effective for periods beginning after June 15, 1997, the Governmental Accounting Standards Board (GASB) requires the disclosure of pension related liabilities for public employer financial statements in accordance with Statements 25 and 27. These statements, which replace GAS Statement No. 5, must be adhered to by any public employee retirement system that follows Generally Accepted Accounting Principles (GAAP).

These disclosures are intended to establish a reporting framework that distinguishes between:

- current financial information about plan assets and financial activities,
- actuarially determined information from a long-term perspective,
- the funded status of the plan, and
- progress being made in accumulating sufficient assets to pay benefits when due.

Footnote disclosures required by GASB Statement No. 25 and 27 include a description of the plan, a summary of significant accounting policies, and information about contributions, legally required reserves, and investment concentrations. As a result of the oversight of the Public Employees Retirement Administration Commission (PERAC) and the conversion of unpaid contributions to pension related debt, the Net Pension Obligation (NPO) as required by Statement No. 27 will effectively always be equal to \$0. The required disclosure information is shown in Table VII.

Table VII

	<u>January 1, 1999</u>	<u>January 1, 2000</u>
(1) Actuarial Accrued Liability	\$85,472,346	\$88,762,762
(2) Actuarial Value of Assets	<u>66,860,613</u>	<u>75,960,104</u>
(3) Unfunded Actuarial Accrued Liability	18,611,733	12,802,658
(4) Funded Ratio (2)/(1)	78.2%	85.6%
(5) Covered Payroll	\$16,269,482	\$17,183,350
(6) UAAL as a percentage of payroll: (3)/(5)	114.4%	74.5%
(7) Annual Required Contribution (ARC)	\$3,087,060	\$3,195,711
(8) Net Pension Obligation	\$0	\$0

PERAC Annual Statement
APPENDIX PAGE 3
ACTUARIAL VALUATION AND ASSUMPTIONS

The most recent actuarial valuation of the System was prepared by PricewaterhouseCoopers LLP as of January 1, 2000.

The normal cost for employees on that date was:	\$1,305,112	7.6% of pay
The normal cost for the employer was:	1,110,141	6.5% of pay
The actuarial liability for active members was:		\$48,197,769
The actuarial liability for retired members was:		40,564,993
Total actuarial accrued liability:		88,762,762
System assets as of that date:		75,960,104
Unfunded actuarial accrued liability:		\$12,802,658
The ratio of system's assets to total actuarial liability was		85.6%
The principal actuarial assumptions used in the valuation are as follows:		
Investment Return:		7.75%
Rate of Salary Increase:		5.5%

SCHEDULE OF FUNDING PROGRESS

Actuarial Valuation Date	Actuarial Value of Assets	Actuarial Accrued Liability	Unfunded Actuarial Accrued Liability	Funded Ratio	Covered Payroll	UAAL as a percent of Covered Payroll
	(a)	(b)	(b-a)	(a/b)	(c)	(b-a)/c
01/01/00	\$75,960,104	\$88,762,762	\$12,802,658	85.6%	\$17,183,350	74.5%
01/01/99	66,860,613	85,472,346	18,611,733	78.2%	16,269,482	114.4%
01/01/98	55,481,151	78,260,821	22,779,670	70.9%	15,426,806	147.7%

Attach Copy of Current Approved Funding Schedule

EXHIBITS

Age/Service Distribution with Salary as of January 1, 2000

Attained Age	Average Salary	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40+	Total
<5										
< 20	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0
20-24	5	0	0	0	0	0	0	0	0	5
	23,104	0	0	0	0	0	0	0	0	23,104
25-29	9	1	0	0	0	0	0	0	0	10
	20,881	29,777	0	0	0	0	0	0	0	21,771
30-34	13	14	6	0	0	0	0	0	0	33
	25,870	33,946	44,213	0	0	0	0	0	0	32,631
35-39	19	10	23	4	0	0	0	0	0	56
	22,525	38,002	42,986	47,972	0	0	0	0	0	35,510
40-44	39	9	28	11	2	0	0	0	0	89
	19,018	32,224	39,868	53,172	35,123	0	0	0	0	31,496
45-49	25	7	16	9	19	5	0	0	0	81
	19,528	37,760	37,018	40,073	55,847	47,405	0	0	0	37,081
50-54	17	11	11	12	17	19	6	0	0	93
	26,284	27,929	31,207	40,980	57,281	56,538	48,014	0	0	42,206
55-59	9	4	17	3	5	7	6	1	1	53
	22,244	26,512	28,429	19,042	42,108	48,948	57,158	40,436	41,531	34,429
60-64	4	5	9	5	2	4	4	4	0	37
	14,442	14,173	34,854	31,781	36,849	39,778	49,788	55,478	0	33,921
65-69	1	2	6	3	5	5	2	0	1	25
	30,940	15,893	26,306	30,208	30,203	34,651	36,542	0	42,585	30,045
70+	2	0	1	0	0	4	0	1	0	8
	15,895	0	30,584	0	0	31,264	0	34,413	0	27,730
Total Employees	143	63	117	47	50	44	18	6	2	490
Average Salary	21,435	31,036	36,677	41,188	50,807	47,984	50,182	49,460	42,058	35,068

Retiree Distribution as of January 1, 2000

Attained Age	Number of Employees			Total Payments		
	Male	Female	Total	Male	Female	Total
< 20	0	0	0	0	0	0
20-24	0	0	0	0	0	0
25-29	0	0	0	0	0	0
30-34	0	0	0	0	0	0
35-39	0	0	0	0	0	0
40-44	0	2	2	0	35,363	35,363
45-49	0	0	0	0	0	0
50-54	3	2	5	83,656	16,154	99,810
55-59	3	3	6	65,075	28,497	93,572
60-64	15	19	34	321,742	153,685	475,427
65-69	24	24	48	606,523	301,491	908,014
70-74	36	43	79	547,471	390,724	938,194
75-79	26	41	67	382,153	329,275	711,429
80-84	20	38	58	186,209	237,981	424,190
85-89	4	21	25	16,446	120,949	137,394
90-94	1	10	11	5,599	56,490	62,089
95-99	0	2	2	0	6,282	6,282
Total	132	205	337	2,214,874	1,676,891	3,891,765
Average (Age/Payment)	72.9	75.8	74.7	16,779	8,180	11,548
Frequency Percent	39.2	60.8	100	56.9	43.1	100

Disabled Retiree Distribution as of January 1, 2000

Attained Age	Number of Employees			Total Payments		
	Male	Female	Total	Male	Female	Total
< 20	0	0	0	0	0	0
20-24	0	0	0	0	0	0
25-29	0	0	0	0	0	0
30-34	0	0	0	0	0	0
35-39	0	0	0	0	0	0
40-44	1	0	1	6,173	0	6,173
45-49	1	0	1	42,886	0	42,886
50-54	9	0	9	230,299	0	230,299
55-59	2	0	2	37,118	0	37,118
60-64	4	0	4	92,055	0	92,055
65-69	3	0	3	49,874	0	49,874
70-74	8	0	8	124,428	0	124,428
75-79	7	2	9	104,810	18,493	123,303
80-84	1	1	2	7,995	10,382	18,378
85-89	0	0	0	0	0	0
90-94	0	1	1	0	10,608	10,608
95-99	0	0	0	0	0	0
Total	36	4	40	695,638	39,483	735,121
Average (Age/Payment)	64.8	81.9	66.5	19,323	9,871	18,378
Frequency Percent	90	10	100	94.6	5.4	100

EXHIBIT 4 - DISTRIBUTION FORECAST:

Based on a closed group, the following is a 30 year forecast of benefit payments net of state reimbursable COLA payments.

<u>Fiscal Year Ending</u>	<u>Estimated Benefit Payments *</u>
2001	4,518
2002	4,809
2003	5,154
2004	5,592
2005	5,987
2006	6,329
2007	6,694
2008	7,018
2009	7,359
2010	7,776
2011	8,267
2012	8,805
2013	9,344
2014	9,895
2015	10,440
2016	11,021
2017	11,597
2018	12,067
2019	12,463
2020	12,923
2021	13,416
2022	13,929
2023	14,317
2024	14,596
2025	14,870
2026	15,143
2027	15,328
2028	15,433
2029	15,480
2030	15,999

* amounts in thousands

EXHIBIT 5 – SUMMARY OF PLAN PROVISIONS:

This summary is prepared in accordance with Chapter 32 as of January 1, 2000, and does not take into account any subsequent changes.

1. Administration

Each of the 107 contributory retirement systems for public employees for the Commonwealth of Massachusetts are guided by the applicable provisions of Chapter 32 of the Massachusetts general laws and other applicable statutes. Although these boards operate semi-independently, there is a uniform set of rules governing benefits, eligibility, contributions, financing, and accounting.

2. Participation

Participation is mandatory for all full-time employees whose employment commences prior to age 65. Eligibility with respect to part-time, professional, temporaries, or intermittent employment is governed by the local board. Membership is optional for certain elected officials, State officials appointed by the Governor, and certain hospital interns.

There are four classes of membership as follows:

- (i) Group 1: Most general employees in State and local government
- (ii) Group 2: Certain specified hazardous duty positions
- (iii) Group 3: State police officers and inspectors
- (iv) Group 4: Local police officers and firefighters

For members in more than one group, participation will be proportional.

3. **Salary**

Salary is defined as gross regular compensation. Salary does not include bonuses, overtime, severance pay, unused sick leave credit, or other similar compensation.

4. **Member Contributions**

Member contributions vary depending upon date hired as follows:

<u>Date of Hire</u>	<u>Member Contribution Rate</u>
Prior to 1975	5.0% of Salary
1975 to 1983	7.0% of Salary
1984 to 1996	8.0% of Salary
1996 and Later plus	9.0% of Salary
1979 and Later	2.0% of Salary in excess of \$30,000

5. **Average Salary**

Average salary is used to determine a participant's benefit. It is defined as the average salary during the three consecutive-year period that produces the highest average. (Alternatively, if a greater amount results, it is the average rate of salary earned during the period or periods, whether or not consecutive, that constitutes the last three years preceding retirement.)

6. **Creditable Service**

In general, creditable service is awarded during the period in which a member contributes to the retirement system.

7. **Service Retirement**

a. **Eligibility:**

For an employee to be eligible for service retirement (also referred to as superannuation), the following conditions are to be met:

- (i) completion of 20 years of service
- (ii) for an employee prior to January 1, 1978, attainment of age 55 as an active member
- (iii) for an employee on or after January 1, 1978, attainment of age 55 as an active member and completion of ten years of service
- (iv) if an employee is a State police officer (Group 3), attainment of age 50

b. Benefit Amount:

The retirement allowance is determined as a product of the participant's Benefit Rate times Average Salary times Creditable Service, where Benefit Rate is determined from the following table:

<u>Age at Retirement</u>	<u>Percentage of Average Salary</u>		
	<u>Group 1</u>	<u>Group 2</u>	<u>Group 4</u>
65 or Over	.025	.025	.025
64	.024	.025	.025
63	.023	.025	.025
62	.022	.025	.025
61	.021	.025	.025
60	.020	.025	.025
59	.019	.024	.025
58	.018	.023	.025
57	.017	.022	.025
56	.016	.021	.025
55	.015	.020	.025
54	.014	.014	.024
53	.013	.013	.023
52	.012	.012	.022
51	.011	.011	.021
50	.010	.010	.020
49	.009	.009	.019
48	.008	.008	.018
47	.007	.007	.017
46	.006	.006	.016
45	.005	.005	.015
44	.004	.004	.004
43	.003	.003	.003
42	.002	.002	.002
41	.001	.001	.001

For Group 3 (State police), the benefit is 50% of the participant's final year's rate of regular salary, plus an additional 1% for each year of service in excess of 20 years.

In addition, for veterans (all groups) there is an additional benefit of \$15 per year for each year of service, up to a maximum of 20 years of service.

8. Deferred Vested Retirement

a. Eligibility:

A participant who has completed ten or more years of creditable service is eligible for a deferred vested retirement benefit. If termination is involuntary, the participant is vested after 6 years.

b. Benefit Amount:

The participant's accrued benefit is payable commencing at age 55, or may be deferred until later at the employee's option.

c. Refund of Contributions:

In lieu of the deferred pension benefit, a member may elect to receive a refund of their accumulated contributions. Members with ten or more years of service are entitled to 100% of the credited interest on their contributions. Members with five to ten years of service are entitled to 50% of the credited interest on their contributions. No credited interest is provided for members with less than five years of service.

9. Accidental Disability

a. Eligibility:

Participants are eligible for an accidental disability benefit, regardless of service or age, if they become permanently and totally incapacitated for further duty as a result of personal injury sustained while in the performance of duties.

b. Benefit Amount:

The accidental disability amount is 72% of annual salary plus \$450 per year for each child plus an additional annuity based upon accumulated Member Contributions with credited interest.

10. Ordinary Disability**a. Eligibility:**

An ordinary disability occurs when a member becomes permanently and totally disabled due to sickness or injury that is not job related. In order to be eligible for an ordinary disability benefit, a member must have ten years of service (and be less than age 55).

b. Benefit Amount:

The ordinary disability amount is equal to the accrued retirement benefit as if the member were age 55. If the member was a veteran, the benefit is 50% of the member's final rate of Salary during the preceding 12 months, plus an annuity based upon accumulated Member Contributions plus credited interest. If the participant is over age 55, he will receive not less than the superannuation allowance to which he is entitled.

11. Survivor Benefits**a. Occupational Death:**

The survivors of a member who dies due to an occupational injury will be entitled to a lump sum return of contributions plus a pension benefit equal to 72% of the participant's annual Salary.

b. Non-Occupational Death:

Upon the death of a member other than due to an occupational injury, the designated beneficiary will be entitled to a retirement benefit as if Option C had been elected with a minimum of \$250 per month to the surviving spouse, plus \$120 for the first child, plus \$90 for each additional child. If no beneficiary is designated and if the employee worked two years, and is married at least one year, the spouse may elect benefits. If there is no designated beneficiary or surviving spouse, then member contributions are returned. If there are dependent children but no surviving spouse, they may elect minimum survivor benefits of \$250 per month plus \$120 for the first child and \$90 for each additional child.

c. Refund of Contributions:

Upon the death of a member not entitled to survivor benefits, the beneficiary is entitled to a refund of all member contributions with interest.

12. Cost-of-Living Increases

In accordance with the adoption of Chapter 17 of the Acts of 1997 the granting of a cost-of-living adjustment will be determined by an annual vote by the Retirement Board. The amount of increase will be based upon the Consumer Price Index, limited to a maximum of 3.0%, beginning on July 1. All retirees, disabled retirees, and beneficiaries who have been receiving benefits payments for at least one year as of July 1 are eligible for the adjustment. The maximum pension benefit on which a COLA may be granted is \$12,000. All COLA's granted to members after 1981 and prior to July 1, 1998 are deemed to be an obligation of the State and are not the liability of the Retirement System.

13. Postretirement Death Benefits

Any benefits following the death of a member after retirement are based upon the form of benefit the participant elected at the time of retirement. There are three available forms as follows:

- (i) Option A – Life annuity
- (ii) Option B – Life annuity with death benefit equal to excess of member contributions plus credited interest to retirement over annuity benefit paid to member
- (iii) Option C – Life annuity with 66-2/3% of benefit continued after death of member to designated joint annuitant

EXHIBIT 6 – ACTUARIAL METHODS AND ASSUMPTIONS:

The actuarial cost method, factors, and assumptions used in determining cost estimates are presented below.

1. **Member Data**

The member data used in the determination of cost estimates consist of pertinent information with respect to the active, inactive, retired, and disabled members of the employer as supplied by the employer to the actuary.

2. **Valuation Date**

January 1, 2000.

3. **Actuarial Cost Method**

The costs of the Plan have been determined in accordance with the individual entry age normal actuarial cost method.

4. **Rate of Investment Return**

It is assumed that the assets of the fund will accumulate at a compound annual rate of 7.75% per annum.

5. **Salary Scale**

It is assumed that salaries including longevity will increase at a rate of 5.5% per year.

6. **Cost-of-Living Increases**

Cost-of-living increases have been assumed to be 3.0% of the lessor of the pension amount and \$12,000 per year.

7. \$30,000 Pay Cap

The \$30,000 salary cap no longer applies for purposes of benefit determination.

8. Value of Investments

Assets held by the fund are valued at market value as reported by the Public Employees' Retirement Administration Commission (PERAC).

9. Annual Rate of Withdrawal Prior to Retirement

Based on an analysis of experience, the assumed annual rates of withdrawal may best be illustrated by the following rates at the following ages:

<u>Age</u>	<u>General Employees</u>	<u>Police and Fire Employees</u>
20	0.12002	0.02100
30	0.05551	0.01654
40	0.02308	0.00559
50	0.01464	0.00000

10. Annual Rate of Mortality

It is assumed that both preretirement and postretirement mortality are represented by the 1983 Group Annuity Mortality Table (with margin) for males and females. Mortality for disabled members is represented by the 1983 Annuity Mortality Table set forward ten years for all disabled members.

11. Service Retirement

Based on an analysis of experience, the assumed annual retirement rates are illustrated at the following ages:

<u>Age</u>	<u>General Employees</u>	<u>Police and Fire Employees</u>
50	0.0000	0.1000
51	0.0000	0.0200
52	0.0000	0.0200
53	0.0000	0.0200
54	0.0000	0.0200
55	0.1255	0.2500
56	0.0321	0.0500
57	0.0310	0.0500
58	0.0334	0.0500
59	0.0348	0.0500
60	0.0784	0.2500
61	0.0692	0.0500
62	0.1511	0.0500
63	0.1071	0.0500
64	0.1037	0.0500
65	0.3568	1.0000
66	0.2214	1.0000
67	0.2159	1.0000
68	0.2164	1.0000
69	0.2536	1.0000
70	1.0000	1.0000

12. Annual Rate of Disability Prior to Retirement

Based on an analysis of experience, the assumed annual rates of disability may best be illustrated by the following probabilities at the following ages:

<u>Attained Age</u>	<u>General Employees</u>	<u>Police and Fire Employees</u>
20	0.00015	0.00050
30	0.00028	0.00114
40	0.00055	0.00434
50	0.00153	0.00750

In addition, it is assumed for the general employees that 45% of all disabilities are ordinary (55% are service connected). For police and fire employees, 10% of all disabilities are assumed to be ordinary (90% are service connected).

13. Family Composition

It is assumed that 80% of all members will be survived by a spouse and that females (males) are three years younger (older) than members.

14. Administrative Expenses

The normal cost is increased by an amount equal to the anticipated administrative expenses for the upcoming fiscal year. The amount for fiscal year 2000 is \$200,000 and is anticipated to increase at 4.5% per year.

EXHIBIT 7 – GLOSSARY OF TERMS:

This glossary summarizes the technical terms contained in this report.

1. **Actuarial Accrued Liability**

That portion of the Actuarial Present Value of plan benefits that is not provided for by future employer Normal Costs or employee contributions.

2. **Actuarial Assumptions**

Assumptions as to the occurrence of future events affecting the Retirement System such as:

- Rates of investment returns
- Increases in a member's salary
- Inflation
- The probability of mortality, turnover, disablement
- Retirement at each age and other relevant items

3. **Actuarial Cost Method**

A procedure for allocating the Actuarial Present Value of pension plan benefits between Normal Cost and Actuarial Accrued Liability.

4. **Actuarial Present Value**

The single sum amount required at the valuation date that is required to provide for anticipated future events based upon the terms of the plan and the Actuarial Assumptions.

5. **Forecast**

A projection of future benefit payments or contribution requirements based upon the terms of the plan, the current asset amounts, the Actuarial Assumptions, and additional assumptions as to the replacement of terminating employees with new employees.

6. Normal Cost

That portion of the Actuarial Present Value of future benefits that is assigned to the current year.

7. Unfunded Actuarial Accrued Liability

That portion of the Actuarial Accrued Liability that is not provided for by current actuarial value of assets.

8. Valuation Method

The method used to divide the cost of future benefits among the Actuarial Accrued Liability, the current year's Normal Costs, and future years' Normal Costs. The resulting current funding requirement is then determined as the current year's Normal Cost plus the payment necessary to amortize the Unfunded Actuarial Liability.

9. Vested Liability

That portion of the Actuarial Present Value of Accrued Benefits that a member would be entitled to if the member terminated employment with the employer as of the valuation date.

CERTIFICATION:

This report fairly represents the actuarial position of the City of Woburn Contributory Retirement System contributing as of January 1, 2000, in accordance with generally accepted actuarial principles applied consistently with the preceding valuation. In our opinion, the actuarial assumptions used to compute actuarial accrued liability and normal cost is reasonably related to plan experience and to reasonable expectations, and represents our best estimate of anticipated plan experience.

PricewaterhouseCoopers LLP

Daniel W. Sherman, ASA, MAAA
Enrolled Actuary No. 99-4086

August 2000